

STATE OF WASHINGTON  
DEPARTMENT OF ECOLOGY

REPORT OF EXAMINATION  
TO APPROPRIATE PUBLIC WATERS OF THE STATE OF WASHINGTON

- ☐ Surface Water (Issued in accordance with the provisions of Chapter 117, Laws of Washington for 1917, and amendments thereto, and the rules and regulations of the Department of Ecology.)
- ☒ Ground Water (Issued in accordance with the provisions of Chapter 263, Laws of Washington for 1945, and amendments thereto, and the rules and regulations of the Department of Ecology.)

PRIORITY DATE	APPLICATION NUMBER	PERMIT NUMBER	CERTIFICATE NUMBER
April 16, 1996	G2-29374		

NAME ARP Water System			
ADDRESS (STREET)	(CITY)	(STATE)	(ZIP CODE)
4620 65 <sup>th</sup> NE	Olympia	Washington	98516

PUBLIC WATERS TO BE APPROPRIATED

SOURCE Well		
TRIBUTARY OF (IF SURFACE WATERS)		
MAXIMUM CUBIC FEET PER SECOND	MAXIMUM GALLONS PER MINUTE	MAXIMUM ACRE FEET PER YEAR
	40	1.0
QUANTITY, TYPE OF USE, PERIOD OF USE		
1.0 Acre-feet per year	Multiple domestic supply (2 homes)	Year-round, as needed

LOCATION OF DIVERSION/WITHDRAWAL

APPROXIMATE LOCATION OF DIVERSION--WITHDRAWAL  
250 feet South and 500 feet West of the Northeast corner of Section 20.

LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION)	SECTION	TOWNSHIP N.	RANGE, (E. OR W.) W.M.	W.R.I.A.	COUNTY
NE <sup>1</sup> / <sub>4</sub> NE <sup>1</sup> / <sub>4</sub>	20	19	1W	13	Thurston

RECORDED PLATTED PROPERTY

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION)

LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED

Lot 2 of Short Subdivision SS-2492A as recorded under Volume 28 of Pages 56-70A as recorded under AFN #9411290180. Records of Thurston County, Washington.

DESCRIPTION OF PROPOSED WORKS

A well 6-inches by 89 feet.

DEVELOPMENT SCHEDULE		
BEGIN PROJECT BY THIS DATE:	COMPLETE PROJECT BY THIS DATE:	WATER PUT TO FULL USE BY THIS DATE:
Started	Completed	In-use

REPORT

**BACKGROUND:**

On April 16, 1996 ARP Water System applied to the Department of Ecology (Ecology) for a permit to appropriate public ground water from a well at a rate of 50 gallons per minute (gpm) for multiple domestic supply. The project is located on the Johnson Point Peninsula within the Deschutes River Water Resource Inventory Area (WRIA 13). The application number is G2-29374.

A legal notice of the proposed appropriation was published, and no protests were received.

Based on my investigation, and the provisions of Chapters 90.03 and 90.44 RCW, I recommend the issuance of a water right permit.

**INVESTIGATION:**

In consideration of this application I reviewed the information submitted with the application, area well logs, applicable geological reports, and water system plans.

The site is located off of Johnson Creek Road, on property overlooking Henderson Inlet. The project site is located within the 30,000-acre Henderson Inlet sub-basin, a portion of WRIA 13, the Deschutes River Watershed.

The sub-basin is roughly 4 miles across and 16 miles long. The area contains two major streams, Woodland and Woodard Creek and several other small creeks that drain smaller portions of the Dickerson Point and Johnson Point peninsulas. With the exception of marine bluffs ranging up to 100 feet, the watershed is flat or gently rolling. Highest elevation is only about 300 feet at Hawks Prairie on the east side of the watershed and at Chambers Prairie on the south.

Henderson Inlet is one of the five inlets that form the southern terminus of Puget Sound. It is located between Budd Inlet on the west and Nisqually Reach on the east. The five mile long water body ranges from ¼ to ¾ miles in width, and averages only about 25 feet in depth. The subject well is located about 300 feet (at its closest point) inland from Henderson Inlet.

The original intent of this application was to secure a water right permit for the domestic supply of 6 homes. Property owners John and Janet Ackers, Mary Pontavola and Nancy Reid, filed this application jointly. Currently 2 homes are served by the well, and in conversations with the applicants, they have indicated that there are no plans to connect additional homes to this system.

The 6-inch well is completed at a depth of 89 feet below ground surface. The well is equipped with a 3 horsepower pump, and the distribution system includes a 90-gallon bladder tank. The well produces 40 gpm.

Neighboring Water Users

The surrounding area is still relatively undeveloped with residential development concentrated along the coast. Lot sizes are generally larger, and the distribution of water wells is for the most part sparse.

The Department of Ecology’s records of water rights for the area show that approximately 50 claims were filed for general domestic supply within a one mile radius of the ARP well. Additionally, water right permit G2-28586 was issued to Mike Purcell in the amount of 29 gpm and 4.5 acre-feet for the domestic supply of 9 homes, from a well located less than 200 feet away. The Purcell well is 100 feet deep and located at a lower surface elevation than the ARP well. Given the low water needs for domestic supply of this nature, I do not anticipate well interference from the ARP well.

The ARP well is completed above sea-level, and should not be at a significant risk for sea-water intrusion. However, in order to protect the applicant’s well, and the wells of neighboring water users, Ecology recommends that the regular chloride levels be tested so as to detect any significant increase.

The water system operator should sample this well for chloride concentration in August of each year. If pumping of the well causes chloride concentrations to exceed 25 milligrams per liter, immediate action shall be required to prevent concentrations from increasing, such as reducing the instantaneous withdrawal rate (gpm) of the well.

Area Geology and Hydrogeology

Repeated glacial advances and retreats formed the geology of the Henderson Inlet watershed. Total depth of the glacier-associated deposits increase from about 500 feet at Chambers Prairie, to over 1,800 feet deep at Johnson Point.

The uppermost material in this area is called “Vashon Drift”, which is composed of large quantities of stratified sand and gravel deposited by the advance and retreat of the glacier. The uppermost formation is called the “Vashon recessional outwash” or (Qvr).

Below the Qvr there generally lies a confining layer called the Vashon glacial till (Qvt). This material is often described by drillers as “hardpan”, and is composed of sand and gravel encased in a matrix of silt and clay.

Beneath the Qvr are the sand and gravel deposits laid down during the Vashon glacial advance (Qva). This zone serves as a significant potable aquifer for the region.

Below the Vashon-aged materials lay the clay and silts of the earlier Kitsap formation, which generally acts as a confining layer for ground water. Deeper still are the deposits of “penultimate” glaciation (Qc), which are used primarily for larger municipal wells.

## Report Continued

Below the Vashon-aged materials lay the clay and silts of the earlier Kitsap formation, which generally acts as a confining layer for ground water. Deeper still are the deposits of "penultimate" glaciation (Qc), which are used primarily for larger municipal wells.

Deeper yet lie the unconsolidated and undifferentiated Tqu deposits, which are deep deposits of mixed glacial and non-glacial origin.

The USGS report entitled "*Hydrology and Quality of Ground Water in Northern Thurston County, Washington*", WRIR 92-4109 (revised) describes seven hydrogeologic units within northern Thurston County. Several of these units serve mainly as confining beds, but all can yield useable amounts of water. The two most extensively used aquifers are associated with Qva and Qc deposits. The top of the Qva generally occurs between 50 and 200 feet above sea level.

Based on the depth, drilling log, and relative location of the subject well, it appears to be completed within the Qva deposits – advanced outwash.

Ground water in northern Thurston County discharges as seepage to lakes, streams, springs, and coastal bluffs; as transpiration by plants, as underflow to marine waters, and as withdrawals from wells.

Figure 6 in the USGS document entitled "*Conceptual Model and Numerical Simulation of the Ground-Water-Flow System in the unconsolidated Sediments of Thurston County, Washington*" WRIR 99-4165 provides a conceptual model of the ground water system. This figure indicates two basic types of subsurface flow components: those which discharge directly to the Puget Sound and those which discharge to mainland surface water bodies. Based upon this model, pumping aquifers at locations where flow paths head toward rivers or lakes will decrease the discharge to and subsequent flow in those water bodies. Wells, on the other hand, which tap aquifers where flow paths are headed toward the Puget Sound, mainly will decrease discharge to the Sound.

### Hydrologic Analysis

A well log provided by the applicant indicates that the well is 90 feet in depth and 6 inches in diameter. The water bearing unit is a gravel and sand layer approximately 19 feet in thickness that occurs from 69 to 90 feet bgs. The static water level is recorded at 65 feet bgs after drilling.

The Thurston County groundwater model (Drost and others, 1999) does not show adequate detail to conduct an analysis of this application. However, a cross section provided in Drost and others (1998), utilizes two wells that are located within the same quarter section as the ARP water system well. These two wells appear to be deeper than the ARP well, and, based on the cross section appear to be drawing water from the Qc aquifer. Based on information on the well log, the ARP well may be drawing water from a permeable gravel and sand lens at the base of the Qf unit.

Ecology's well log data base reports a total of 146 water supply wells within one mile of the ARP water system well. Most wells are less than 100 feet deep. Ten wells are located within the same quarter-section as the ARP well and range in depth from 67 feet to 167 feet. The five shallower wells (less than 100 feet deep), are likely drawing water from permeable zones located at the base of the Qf unit. The deeper wells are likely drawing water from the Qc aquifer.

Ground water at this location is discharging to marine water. Using a USGS quad map, it appears the surface elevation at the location of the ARP well is approximately 100 feet above msl, making the static water level of the well approximately 35 feet above msl.

### Water Demand

The water requirements for homes in this area is approximately 450 gallon per day, this includes adequate water for the irrigation of lawns and gardens. Accordingly, I recommend the issuance of a permit in the amount of 40 gpm, and 1.0 acre-feet per year.

### FINDINGS AND CONCLUSIONS:

In accordance with Chapters 90.03 and 90.44 RCW, I find there is water available for appropriation from the source in question, that the appropriation as recommended is a beneficial use, and should not impair existing rights or be detrimental to public welfare.

### RECOMMENDATIONS:

I recommend the issuance of a permit in the amount of 40 gpm and 1.0 acre-feet year-round as needed for multiple domestic supply.

This recommendation is subject to the following provisions:

### PROVISIONS:

The water appropriated under this application will be used for public water supply. The State Board of Health rules require public water supply owners to obtain written approval from the Office of Water Supply, Department of Health, 1112 SE Quince Street, PO Box 47890, Olympia, Washington 98504-7890, prior to any new construction or alterations of a public water supply system.

An approved measuring device shall be installed and maintained for each of the sources identified by this water right in accordance with the rule "Requirements for Measuring and Reporting Water Use", Chapter 173-173 WAC. Water use data shall be recorded *monthly* and maintained by the property owner for a minimum of five years, and shall be promptly submitted to Ecology upon request.

Department of Ecology personnel, upon presentation of proper credentials, shall have access at reasonable times, to the records of water use that are kept to meet the above conditions, and to inspect at reasonable times any measuring device used to meet the above conditions.

The applicant is advised that notice of Proof of Appropriation of water (under which the final certificate of water right is issued) should not be filed until the permanent distribution system has been constructed and that quantity of water allocated by the permit to the extent water is required, has been put to full beneficial use.

“The water system operator should sample this well for chloride concentration in August of each year. If pumping of the well causes chloride concentrations to exceed 25 milligrams per liter, immediate action shall be required to prevent concentrations from increasing (such as reducing the instantaneous withdrawal rate (gpm) of the well.”

The Water Resources Act of 1971, Chapter 90.54 RCW specifies certain criteria regarding utilization and management of the waters of the State in the best public interest. Favorable consideration of this application has been based on sufficient waters available, at least during portions of the year. However, it is pointed out to the applicant that this use of water may be subject to regulation at certain times, based on the necessity to maintain water quantities sufficient for preservation of the natural environment.

REPORTED BY: Jill E Wahl Date: June 28, 2002


The statutory permit fee for this application is \$20.00.

FINDINGS OF FACT AND DECISION

Upon reviewing the above report, I find all facts, relevant and material to the subject application, have been thoroughly investigated. Furthermore, I find water is available for appropriation and the appropriation as recommended is a beneficial use and will not be detrimental to existing rights or the public welfare.

Therefore, I ORDER a permit be issued under Ground Water Application Number G2-29374, subject to existing rights and indicated provisions, to allow appropriation of public ground water for the amount and uses specified in the foregoing report.

Signed at Olympia, Washington, this 28th day of June, 2002.

  
J. Mike Harris  
Water Resources Supervisor  
Southwest Regional Office